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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/977,875	10/15/2001	Christopher D. Eckhoff	75622.P0048	3782

7590 05/11/2006

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EXAMINER	
JAMAL, ALEXANDER	
ART UNIT	**PAPER NUMBER**
2614	

DATE MAILED: 05/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/977,875	ECKHOFF ET AL.	
	Examiner	Art Unit	
	Alexander Jamal	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 February 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Based upon the submitted amendment via RCE (2-21-2006), the examiner notes that claims 1,6,9,10 have been amended and claims 13-16 have been added.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. **Claims 1,2,13,** rejected under 35 U.S.C. 103(a) as being unpatentable over Apfel (5619567) and further in view of Ludeman (6665398).

As per **claim 1,** Apfel discloses a variable DC feed characteristic for a SLIC that switches from a normal mode 401 to a modified mode 402 DC feed (Fig. 4). The normal mode is switched to the modified mode when Vab is less than or equal to threshold B. The mode is switched back to the normal mode at threshold E. Apfel discloses that mode is switched (from either on-hook to off-hook or off-hook to on-hook) based upon a hook switch threshold (points E and B in Fig. 4). However, Apfel does not disclose that the switching occurs occurs at two distinct points (Apfel only has one switching threshold).

Ludeman discloses a SLIC that provides a 'threshold window' 100 (Fig. 4) that comprises two distinct switching points Ish- and Ish+ to begin the switching from onhook to offhook and from offhook to onhook. The points are set based upon a programmable threshold value (Col 5 lines 10-30). Ludeman discloses that prior art systems such as that shown in Fig. 2 rely on single switching thresholds are unstable around the transition point because of the speed of change (Col 2 lines 10-25), and teaches that his inventive system overcomes the drawbacks of the prior art (Col 2 lines 50-55). It would have been obvious to one of ordinary skill in the art at the time of this application to have two distinct switching points B and E in Fig. 4 of Apfel for the purpose of providing a longer, and more stable transition.

As per **claim 13,** it is rejected for the same reasons as the claim 1 rejection.

As per **claim 2,** curve 401 (APFEL: Fig. 4) is linear, defined by VBAT-Voff1, and has a slope corresponding to an impedance.

5. **Claims 3-5,14,16** rejected under 35 U.S.C. 103(a) as being unpatentable over Apfel (5619567) in view of Ludeman (6665398) as applied to claims 1,13.

As per **claims 3,14,16,** Apfel uses an open circuit voltage value (VBAT-Voff1), two relative thresholds (B,E), and a target voltage (VBAT-Voff3) to define linear portions 401,402. However Apfel does not specify using a target open circuit voltage in defining the load line.

Since the impedance (slope) of the modified characteristic (402 in Fig. 4) is the same as the unmodified characteristic 401, the line could be defined by any current/voltage point (open circuit or loaded) relative to VBAT-Voff1 and still obtain the same characteristic curve. It would have been obvious to one of ordinary skill in the art at the time of this application to define the characteristic 402 with any voltage/current relative to the characteristic 401 as a matter of design choice.

As per **claim 4,** claim rejected for same reasons as claims 2,3. The impedance (slope) of both curves is equal (Fig. 4).

As per **claim 5,** Apfel (Fig. 1b) discloses the impedance (slope) is 400 ohms (approximately 320 ohms).

6. **Claims 6-9,** rejected under 35 U.S.C. 103(a) as being unpatentable over Apfel (5619567) in view of Ludeman (6665398), and further in view of Zhou (5878133).

As per **claims 6,** Apfel and Ludeman disclose claim 6 for the same reasons as the rejection of claim 1. However, they do not disclose using programmable registers to hold the variables that define the characteristic curve.

Zhou teaches a Digital Direct Current Feed control for a SLIC that uses registers to store values that define a characteristic feed curve (Col 7 lines 10-55). It would have been obvious to one of ordinary skill in the art at the time of this application to digitally implement as much of the SLIC circuitry as possible for the advantage of providing a more easily manufactured product.

As per **claim 7,** Zhou discloses a DSP.

As per **claims 8,9,** claim rejected for same reasons as claim 2-4.

7. **Claims 10-12,15,** rejected under 35 U.S.C. 103(a) as being unpatentable over Apfel (5619567) in view of Ludeman (6665398) in view of Zhou (5878133) as applied to claims 6,9,13.

As per **claim 10,** Apfel in view of Ludeman in view of Zhou uses digital registers to store values used to define a characteristic curve. Apfel uses an open circuit voltage value (VBAT-Voff1), two relative thresholds (B,E), and a target voltage (VBAT-Voff3). However they do not specify using a target open circuit voltage in defining the load line.

Since the impedance (slope) of the modified characteristic (402 in Fig. 4) is the same as the unmodified characteristic 401, the line could be defined by any current/voltage point (open circuit or loaded) relative to VBAT-Voff1 and still obtain the

same characteristic curve. It would have been obvious to one of ordinary skill in the art at the time of this application to define the characteristic 402 with any voltage/current relative to the characteristic 401 as a matter of design choice.

As per **claim 11,** claim rejected for same reasons as claims 10. The impedance (slope) of both curves is equal (Fig. 4).

As per **claims 12,15,** Apfel (Fig. 1b) discloses the impedance (slope) is 400 ohms (approximately 320 ohms).

Response to Arguments

1. Applicant's arguments with respect to claims 1-16 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander Jamal whose telephone number is 571-272-7498. The examiner can normally be reached on M-F 9AM-6PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis A Kuntz can be reached on 571-272-7499. The fax phone numbers for the organization where this application or proceeding is assigned are **571-273-8300** for regular communications and **571-273-8300** for After Final communications.

CURTIS KUNTZ
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

AJ
May 3, 2006